Total coal consumption = 300X50 = 15,000 kg (for the 500 minutes). The average coal consumption will be 30 kg per minute, or 0.5 kg per second. The maximum rate of coal consumption will be approximately 1.25 kg per second. This coal gasified in a producer supplies 3.5 cu m of gas per kilogram of coal gasified and this gas, burned with 40 per cent excess air, requires 1.87 volumes of air per 1 volume of gas and the products of combustion will be 2.68 volumes. Fig. 183 shows the heat capacity and calorific intensity curves of the producer gas, the air supply and the waste gases, as computed according to the methods of Mallard and Le Chatelier. These curves are based upon the combustion or burning of 100 molecular volumes or 2,232 cu m of the gas fuel under consideration for use in the furnaces.

	Required for Heating		Available from Products of Combustion	
	Gas Check	Air Check	Gas Check	Air Check
Temp, top of checkerwork,	200	1200	1700	1700
Temp, bottom of checker,	600	300	800	600
Temp, increase or decrease,	600	900	900	1100
Heat capacity in calories at.			4140	4140
(Based upon 100 molecular	960	1700	1750	
volumes of the gas burnt •	450	480		1250
Heat in calories per 100 volumes of gas burnt to be absorbed from checkerwork	510	1220	2290*	2890*
Heat in calories per cubic burnt to be given out by or	228.5	546.6	1071*	1295*

* These values give the total amount of heat available in 'the products of combustion of 100 molecular volumes or 1 cu m of the gas cooled through the assumed temperature range of either the gas or the air checker, and which must be divided between the. two checkers.

By assuming that 2 cu m of gas are burned the proportion of the products of combustion required for the heating of the two checkers may be arrived at: